

# Installation of SMARTS Client on CICS for EntireX

Software AG recommends that you keep unmodified copies of all materials distributed or created as part of the installation process. This may assist with problem diagnosis later.

The installation procedure is described under the following headings:

- The Installation Tape
- Installing the SMARTS CICS Client Environment
- Installation Verification
- Where Next ?

The configuration parameters are described in *Configuring the SMARTS Environment*.

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## The Installation Tape

This section describes the contents of the installation tape for usage in connection with EntireX:

- Tape Contents
- Copying Contents of the Tape to Disk

### Tape Contents

#### Datasets Created during the Installation Process

| Dataset         | Contains ..                               |
|-----------------|---|
| APSVrs.USERSRCE | Source members needed during installation |

#### Members Copied to the APSvrs.USERSRCE Dataset

The following table lists the sample members copied to the user source dataset during the installation process. These must be modified before being used:

| Member   | Contains ..  |
|----------|--|
| EXXCONF  | Sample member with environment parameters.             |
| EXXSYSYP | Sample member with SMARTS configuration parms.         |
| EXXDIR   | Sample configuration member for Location Transparency. |
| PXANHOST | Sample member with HOSTS definitions for TCP/IP.       |
| PXANSRVT | Sample member with SERVICES definitions for TCP/IP.    |
| DFHCSDUP | Job to define programs and transactions to CICS        |
| DFHINPUT | Input file for DFHCSDUP job.                           |
| PACNZNEP | Sample assembler source of DFHZNEP node error program. |

## Copying Contents of the Tape to Disk

If not yet done, copying the tape contents to disk as described under *Copying Tape Contents to Disk* in the EntireX documentation. A description of the tape contents can be found under *Contents of Mainframe Tape*.

## Installing the SMARTS CICS Client Environment

### Important:

This section describes how to install the CICS Client Environment for SMARTS specifically for usage in connection with EntireX.

### Step 1: Allocate and Initialize User PDS Dataset

- To create and initialize the datasets required for SMARTS, modify the sample job in member EXXINS2 on the APS271.S001 dataset to suit your installation's environment, and run it to create the appropriate dataset.

This job copies all needed modifiable members from the APS271.S001 dataset to the newly created APSvrs.USERSRCE dataset in order to retain all APS271.S001 members as delivered.

### Step 2: Modify the CICS Procedure

#### 1. Add the following datasets to the DFHRPL concatenation:

```
DFHRPL DD DISP=SHR,DSN=...
        DD DISP=SHR,DSN=APSVrs.LDnn
        DD DISP=SHR,DSN=APSVrs.LD00
        DD DISP=SHR,DSN=XTEvrs.LDnn
        DD DISP=SHR,DSN=BTEvrs.LSnn
        DD DISP=SHR,DSN=BTEvrs.LDnn
        DD DISP=SHR,DSN=EXXvrs.LOAD
        DD DISP=SHR,DSN=...
```

#### 2. Add the following DD statements to your CICS procedure:

```

/* -----
/* Definition of environment variables and SMARTS configuration
/* -----
//SYSPARM DD DISP=SHR,DSN=APSVrs.USERSRCE(EXXSYSP)
//CONFIG DD DISP=SHR,DSN=APSVrs.USERSRCE(EXXCONF)
/*
/* -----
/* Optional: Only used with Location Transparency
/* Datasets and code conversion tables for Location Transparency
/* -----
//XDSINI DD DISP=SHR,DSN=APSVrs.USERSRCE(EXXDIR)
//ECSOBJ DD DISP=SHR,DSN=BTEvrs.ECnn
/*
/* -----
/* TCP data member
/* (contact your TCP/IP administrator)
/* -----
//SYSTCPD DD DISP=SHR,DSN=SYS1.PARMLIB(TCPDATA)
/*
/* -----
/* Optional: HOSTS and services definitions
/* -----
//HOSTS DD DISP=SHR,DSN=APSVrs.USERSRCE(PXANHOST)
//SERVICES DD DISP=SHR,DSN=APSVrs.USERSRCE(PXANSRVT)
/*
/* -----
/* Optional: Only used with SSL
/* Certificate file for SSL calls
/* -----
//CACERT DD DISP=SHR,DSN=EXXvrs.CERT(CACERT)
//RANDFILE DD DISP=SHR,DSN=EXXvrs.SRCE(RND)
/*
/* -----
/* Trace and Output datasets
/* -----
//APSLOG DD SYSOUT=X
//XTSLOG DD SYSOUT=X
//SYSPRINT DD SYSOUT=X
//STDOUT DD SYSOUT=X
//STDERR DD SYSOUT=X
//XDSOUT DD SYSOUT=X

```

### Step 3: Modify the EXXSYSP member (SMARTS configuration)

- This dataset is required to define the runtime characteristics of your SMARTS environment. Refer to member called EXXSYSP in APSvrs.USERSRCE which has been created in step 1. This file contains the following:

#### EXXSYSP:

```

* -----
* Support for IBM OS/390 File Subsystem.
* -----
CDI_DRIVER=('FILE,PAAMFSIO')
*
* -----
* TCP/IP configuration for SMARTS (OE TCP/IP STACK).
* -----
CDI_DRIVER=('TCPIP,PAAOSOCK')
*
* -----

```

```
* DDNAME assignments for ENV dataset HOSTS and SERVICES file
* -----
ENVIRONMENT_VARIABLES=DD:CONFIG
HOSTS_FILE=DD:HOSTS
SERVICES_FILE=DD:SERVICES
*
```

**Notes:**

1. SMARTS only supports IBM OpenEdition TCP/IP stack for z/OS and OS/390.
2. Every TCP/IP communication (OE stack) needs an USS segment (formerly called OE segment), therefore you need to define this for your CICS addressspace.

Contact your TCP/IP administrator for more information or see section *SMARTS POSIX Layer Configuration* and *Sysparm Format*.

**Step 4: Modify the EXXCONF member (Environment variables)**

- Here you can set environment variables for applications that are using SMARTS. This dataset is specified by the ENVIRONMENT\_VARIABLES parameter in SYSPARM, which defaults to "CONFIG". Refer to member called EXXCONF in APSvrs.USERSRCE which has been created in step 1:

**EXXCONF:**

```
* -----
* BROKER VARIABLES
* -----
ETB_TRANSPORT=TCP-SSL-NET
ETB_STUBLOG=3
*
* -----
* SET DDNAMES FOR SSL AND LOCAL TRANSPARENCY (Optional)
* -----
RANDFILE=DD:RANDFILE
ECSOBJDIR=DD:ECSOBJ/
*
* -----
* SET DDNAME AND TRACE LEVEL FOR XTS
* -----
XTSLOG=DD:XTSLOG
* XTSTRACE=65534
```

For more information, see the section *Environment variables in Entire X* of the EntireX documentation.

**Step 5: Modify the PXANHOST and PXANSRVT member (optional)****1. Customize the SMARTS TCP/IP host file (PXANHOST)**

If your TCP/IP stack on OS/390 does not support host name/host address lookup (DNS), SMARTS uses a local address table that mimics the DNS functionality.

Use the sample host name parameter member PXANHOST in APSvrs.USERSRCE and customize to suit your needs. When customizing the local table, define any host names and addresses that will be accessed from within the SMARTS address space.

**Sample:**

For a local host with name LOCAL and IP address 127.0.0.1 and a remote host with name REMOTE and IP address 157.189.160.95, you should specify:

```
127.0.0.1      LOCAL
157.189.160.95 ETB001
```

**2. Customize the SMARTS TCP/IP service file (PXANSRVT)**

This table is used to set the relationship between services names and protocol numbers for any TCP/IP stack implementation that does not provide this facility.

**Sample:**

Format: <service\_name> <protocol num>/<protocol name> (#COMMENT)

```
ETB001      3800/tcp      # Broker ETB001
```

**Note:**

The need of the services file depends on the application using the Broker stub (i.e. Natural RPC may require it).

**Step 6: Provide a DFHZNEP node error program (optional)**

- If the installation already has a DFHZNEP node error program in use, modify it to invoke the SMNE transaction under the conditions detailed in the model assembler program PACNZNEP, supplied in the APSvrs.USERSRCE dataset.

If the installation does not have a DFHZNEP node error program in use, use the supplied model program PACNZNEP to create one.

The node error program gets control on the following CICS events:

```
DFH2410 - NODE UNRECOVERABLE VTAM LOSTERM ERROR CODE XX
DFH3462 - SESSION TERMINATED
```

If the node error program gets control, it will clean up the SMARTS resources within CICS.

**Note:**

For additional information on CICS node error programs, please refer to the appropriate IBM CICS documentation.

**Step 7: Customize your CICS****1. Define Programs and Transactions to CICS using DFHCSDUP**

Please use sample job DFHCSDUP in APSvrs.USERSRCE to apply all necessary definitions to CICS. The member DFHINPUT is the input for job DFHCSDUP and contains all necessary definitions to CICS.

**Important:**

Autoinstall must be activated since there are many other programs will be loaded dynamically by SMARTS. AUTOINSTALL feature in CICS can be activated by setting the SIT parm :

```
PGAIPGM=ACTIVE
```

## 2. Define Programs to the Program List Tables

### POSIX Initialization Table

The program list table PLTPI is used to automatically initialize SMARTS POSIX at CICS startup: In the DFHPLTxx for the PLTPI, insert PACNSMGO as a second phase PLT program.

Sample PLT entry:

```
DFHPLT TYPE=ENTRY, PROGRAM=PACNSMGO
```

### POSIX Shutdown Table

The program list table PLTSD is used to automatically terminate SMARTS POSIX at CICS shutdown: In the DFHPLTxx for the PLTSD, insert PACNKERX as a first phase PLT program.

Sample PLT entry:

```
DFHPLT TYPE=ENTRY, PROGRAM=PACNKERX
```



#### Warning:

If CICS will be shut down with the **Immediate** command (i.e. "CEMT P,SHUT,I"), control is not being given to the DFHPLTSD at shutdown, and SMARTS cannot terminate normally. Software AG strongly recommends not to use "CEMT P SHUT I".

## Installation Verification

### 1) Initialization Messages of SMARTS

A successful initialization of SMARTS can be verified in the CICS protocol output and looks similar to this messages:

```
+APSPSX0015-* POSIX V271 Build 030212 Patch level=2 Initialization in prog
+APSPSX0004-* Module 'L$CPRSU' Loaded
+APSPSX0050-SysName CDI FILE protocol initialized
+APSPSX0066-SysName Trace level = 1
+APSPSX0068-SysName No System Tracing enabled
+APSPSX0069-SysName No functions are being traced
+APSPSX0036-SysName Global environment variables processed successfully
+APSPSX0026-SysName Sockets Initialization successful
+APSPSX0050-SysName CDI TCPIP protocol initialized
+APSPSX0064-SysName Trace DataSpace Initialised, ESIZE=0:BSIZE=0:NBLKS=0
+APSPSX0065-SysName Log DataSpace Initialised, ESIZE=0:BSIZE=0:NBLKS=0
+APSPSX0008-SysName SMARTS SERVER V271 System initialized, nucleus size 56
+PACNKERN - POSIX INTERFACE INITIALISED.
```

## 2) Installation Verification

Verification of communication between CICS using Natural and EntireX Communicator can be performed by logging on the Natural library SYSETB and proceeding the Natural Tutorial .

### Example – CICS:

```
N411  RCA=( BROKER ) ,RCALIAS=( BROKER ,EXAAPSC )
```

## 3) CICS Shutdown verification

A successful shutdown of CICS using the "CEMT P,SHUT" command will present PACNKERX –  
POSIX INTERFACE TERMINATED on the terminal that issued the shutdown command. This verifies that control has been given to the SMARTS termination routine.

## Where Next ?

You have now installed the SMARTS client under CICS which can be used by EntireX. You can continue now with the installation of the applications that has to run on SMARTS. This can be any application using the delivered SMARTS stub EXAAPSC and running under CICS, for instance EntireX RPC Servers, Natural RPC client/servers or other applications (e.g. COBOL) that use the SMARTS stub to access EntireX Broker.

Note that the configuration procedure of the application that runs on SMARTS may instruct you to modify some of the configuration parameters of SMARTS.